

# SEQUENCE LISTING

<110> MAY, Gregory D.  
 CLENDENNEN, Stephanie K.  
 MASON, Hugh S.  
 GOMEZ LIM, Miguel A.  
 ARNTZEN, Charles J.

<120> DNA Regulatory Elements Associated with Fruit Development

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<150> US 09/160,351  
 <151> 1998-09-25

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<170> PatentIn version 2.0

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990

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115

120

125

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275 280 285

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Gly Ile Gly Arg Val His Ala Leu Thr Asp Gln Leu Gly Leu Phe Ser  
305 310 315 320

Leu Val Thr Thr Ala Glu His Glu Lys Met Val Asp Gly Ser Lys Leu  
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 Leu Ser Glu Asn Glu Ser Phe Gln Cys Arg Leu Val Leu Leu His Leu  
 610 615 620  
 Gln Met His Asp Gln Phe Ala Ser Ser Ser Ile Glu His His Ser Val  
 625 630 635 640  
 Ser Asp Val Phe Tyr Cys Arg Ser Ala Ile Asp Trp Cys Leu Leu Arg  
 645 650 655  
 Asn Ala Arg Gln Gln Ser Ser Pro Ala Gln Arg Gly Gly Gln Ser Leu  
 660 665 670  
 Gln Ile Gln Gln His Arg Glu Asp Glu Thr Leu Arg Ser Lys Pro Gly  
 675 680 685  
 Arg Pro Ala Ser Pro Gln Glu Leu Gln His Pro Ser Pro Val Gly Cys  
 690 695 700  
 Pro Pro Ile Arg Arg Ala Val Thr Gly Leu Gln Ser Phe Gly Arg Arg  
 705 710 715 720  
 Arg Leu Asp Pro Glu Glu Arg Arg Arg Leu Leu Ala Gln Arg Leu Leu  
 725 730 735  
 Ser Ile His Ser Cys Arg Lys Arg Ala Asp Pro Arg Ile Gly Ser Gly

750

Val Trp Ser Ala Tyr Ser Met Thr Ser Val Cys Lys Ile Thr Ser Ser  
1045 1050 1055

Ala Ser Ala Ser Ala Cys Gln Lys Thr Ile Ile Cys Tyr Gly Ala Cys  
 1060 1065 1070

Phe Thr Pro Cys Tyr Ile Ile Ile Ile His Val Ser Phe Val Ser Cys  
 1075 1080 1085

Ser Leu Tyr Arg Ser His Lys Ser Leu Asp Arg Phe Lys Phe Leu Gly  
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Tyr Ile Val Cys Ser Thr Leu Ser Leu Leu Asn Ile Val Thr Ala Phe  
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Asn Ile Gly Leu Gln Glu  
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<212> PRT

<213> Musa acuminata

<400> 21

Asn Trp Thr His Ala Val Ala Ala Ala Leu Glu Trp Ile Pro Arg Ala  
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Phe Tyr Cys Leu Val Phe Ser Leu Thr Phe Pro Asp Ser Ser Ile Phe  
 35 40 45

Gly Asp Ile Gln Asn Ser Ser Pro Ile Ser Tyr Phe Asn Phe Glu Asp  
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His Met Ala Asp Ile Ser Lys Tyr Val Lys Gly Ser Phe His Arg Pro  
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His Asp Arg Asn Asn Lys Val Gly Leu Asn Leu Phe Arg His His Lys  
 85 90 95

Ala Gln His Gln Asn Ile His Leu Ile Lys Ser Ser Leu Ile Ile Ile  
 100 105 110

Leu Gln Thr Ala Thr Leu Asn Asn Glu Val Leu Ser Pro Ser Asn Val  
 115 120 125

Leu Phe Thr Gln Arg Phe Ala Thr Thr Leu Ala Asp Phe Tyr Gln Trp  
 130 135 140

Ser Leu Asp Lys Ile Leu Val Ala Arg Asn Ser Asn Asn Gln Ile Glu  
 145 150 155 160

Leu Tyr Pro Leu Arg Leu Met Thr Glu Pro Ile Leu Arg Val Leu Ser  
 165 170 175

Val Thr Trp Asp Asn Gly Arg Tyr Gln Leu Phe Met Ile Lys Ile Leu  
 180 185 190

Ile	Val	Ile	Ser	Ser	Ser	Leu	Ile	Phe	Asn	Lys	Phe	Asp	Ser	Asp	Trp
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Lys	Lys	Lys	Lys	Phe	Ser	Ser	His	Ser	Leu	Val	Gly	His	Arg	Asn	Ile
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Lys	Leu	Pro	Gly	Ile	Phe	Glu	His	Met	Tyr	Arg	Lys	Ile	Asp	Leu	Leu
225					230					235					240
Lys	Ser	Cys	Leu	Ile	Asn	Ala	Ala	Val	Tyr	Ser	Leu	Val	Leu	Pro	Gln
				245					250					255	
Leu	Ala	Tyr	Pro	Leu	Gly	Val	Glu	Asp	Gln	Thr	Cys	Glu	Gln	Tyr	Ser
			260					265					270		
Pro	Phe	Leu	Met	Ile	Asn	Tyr	Asp	Gly	Cys	Val	Cys	Lys	His	Ser	Lys
		275					280					285			
Phe	Ser	Ile	Asn	Val	Glu	Leu	Glu	Glu	Phe	Thr	His	Arg	Thr	Asn	Ser
	290					295					300				
Val	Cys	Ser	Val	Trp	Leu	Leu	Leu	Ser	Met	Arg	Lys	Trp	Leu	Met	Val
305					310					315					320
Ala	Ser	Cys	Lys	Cys	Thr	Pro	His	Leu	Lys	Asp	Cys	Leu	Asp	Ala	Cys
				325					330					335	
Ile	Asp	Tyr	Val	Ser	Ser	Ile	Phe	Asn	Ser	Phe	Asp	Arg	Cys	Ile	Val
			340					345					350		
Leu	Ile	Arg	Ser	Arg	Thr	Cys	Asp	Asp	Lys	Asn	Leu	Phe	His	Tyr	Leu
		355					360					365			
Pro	Ile	Phe	Gln	Met	Glu	Gln	Asp	Phe	Gln	Val	Leu	Ile	Gln	Asn	Phe
	370					375					380				
Gly	Arg	Asp	Lys	Asp	Gly	Gly	Glu	Lys	Glu	Gln	Ala	Val	Ala	Phe	Arg
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Phe	Leu	Leu	Ser	Gly	Ser	Gln	Glu	Phe	Gln	Glu	Glu	Gly	Arg	Pro	Glu
				405					410					415	
Gly	Met	Met	Pro	Val	Ser	Lys	Pro	Leu	Tyr	Lys	Glu	Glu	His	Ser	Met
			420					425					430		
Leu	Met	Asn	Thr	Asn	His	Phe	Ser	Gly	Glu	Glu	Glu	Asn	Pro	Phe	Asp
		435					440					445			
Arg	Val	Val	Val	Met	Ala	Thr	Lys	Ala	Ser	Leu	Ser	Ile	Lys	Gly	Phe
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Ala	Leu	Leu	Val	Ser	Val	Leu	Val	Ala	Val	Pro	Thr	Ser	Ser	Leu	Ser
465					470					475					480
Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Tyr	Tyr
				485					490					495	
Thr	Phe	Asp	Cys	Leu	Leu	Gln	Ile	Tyr	Gly	Phe	Tyr	Lys	Ser	Ser	Ser

500

505

510

Phe Trp Phe Asn His Gly Arg Leu Tyr Phe Gln Asn Leu Pro Ala Phe  
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Cys Leu Phe Ile Ser Cys Asn Ile Leu Phe Leu Asp Trp Leu Thr Ser  
530 535 540

Phe Thr Val Ser Ser Tyr Val Thr Val Ile Phe Gly Ile Ile Gly Arg  
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Ile Lys Lys Ile Asn Phe Ile Gln Cys Tyr Ile Tyr Ile Tyr Ile Tyr  
565 570 575

Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Leu Val Glu Thr Trp  
580 585 590

Tyr Asn Ser His Val Cys Ser Leu Tyr Asn Lys Met Ser Ser Pro Phe  
595 600 605

Asn Ala Asp Ser Tyr Ser Thr Cys Arg Cys Thr Thr Asn Leu Leu Asp  
610 615 620

His Leu Pro Ser Thr Thr Ala Lys Ser Pro Met Cys Ser Thr Ala Gly  
625 630 635 640

Val Gln Ser Ile Gly Val Cys Tyr Gly Met Leu Gly Asn Asn Leu Pro  
645 650 655

Pro Pro Ser Glu Val Val Ser Leu Tyr Lys Ser Asn Asn Ile Ala Arg  
660 665 670

Met Arg Leu Tyr Asp Pro Asn Gln Ala Ala Leu Gln Ala Leu Arg Asn  
675 680 685

Ser Asn Ile Gln Val Leu Leu Asp Val Pro Arg Ser Asp Val Gln Ser  
690 695 700

Leu Ala Ser Asn Pro Ser Ala Ala Gly Asp Trp Ile Arg Arg Asn Val  
705 710 715 720

Val Ala Tyr Trp Pro Ser Val Ser Phe Arg Tyr Ile Ala Val Gly Asn  
725 730 735

Glu Leu Ile Pro Gly Ser Asp Leu Ala Gln Tyr Ile Leu Pro Ala Met  
740 745 750

Arg Asn Ile Tyr Asn Ala Leu Ser Ser Ala Gly Leu Gln Asn Gln Ile  
755 760 765

Lys Val Ser Thr Ala Val Asp Thr Gly Val Leu Gly Thr Ser Tyr Pro  
770 775 780

Pro Ser Ala Gly Ala Phe Ser Ser Ala Ala Gln Ala Tyr Leu Ser Pro  
785 790 795 800

Ile Val Gln Phe Leu Ala Ser Asn Gly Ala Pro Leu Leu Val Asn Val  
805 810 815



Tyr Pro Tyr Phe Ser Tyr Thr Gly Asn Pro Gly Gln Ile Ser Leu Pro  
820 825 830

Tyr Ala Leu Phe Thr Ala Ser Gly Val Val Val Gln Asp Gly Arg Phe  
835 840 845

Ser Tyr Gln Asn Leu Phe Asp Ala Ile Val Asp Ala Val Phe Ala Ala  
850 855 860

Leu Glu Arg Val Gly Gly Ala Asn Val Ala Val Val Val Ser Glu Ser  
865 870 875 880

Gly Trp Pro Ser Ala Gly Gly Gly Ala Glu Ala Ser Thr Ser Asn Ala  
885 890 895

Gln Thr Tyr Asn Gln Asn Leu Ile Arg His Val Gly Gly Gly Thr Pro  
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Arg Arg Pro Gly Lys Glu Ile Glu Ala Tyr Ile Phe Glu Met Phe Asn  
915 920 925

Glu Asn Cys Lys Ala Gly Gly Ile Glu Gln Asn Phe Gly Leu Phe Tyr  
930 935 940

Pro Asn Lys Gln Pro Val Tyr Gln Ile Ser Phe Lys Leu Thr Cys Lys  
945 950 955 960

Val Asp Glu Ser Ser Pro Thr Tyr Leu Pro Thr Tyr Glu Asn Met Lys  
965 970 975

Ser Thr Lys Ile Lys Gly Glu Phe Ser Trp Arg Lys Leu Asn His Asp  
980 985 990

Asp Ile Gln Thr Pro Leu Phe Thr His Tyr Gln Tyr Val Thr Ser Phe  
995 1000 1005

Leu Lys Leu Glu Arg Ile Thr Ile Trp Thr Tyr Lys Tyr Phe Gly Ser  
1010 1015 1020

Leu Phe His Thr Ile Tyr Ser Lys Lys Asp Val Phe Gly Val Leu Asn  
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Thr Val Leu Gln Phe Ala Arg Leu Pro Leu Gln Arg Gln Leu Gln His  
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Ala Lys Lys Pro Ser Ser Ala Met Gly His Val Leu His Leu Asp Gly  
1060 1065 1070

Ala Thr Ser Ser Ser Phe Met Phe His Phe Arg Ser Arg Ala Leu Tyr  
1075 1080 1085

Ile Asp His Ile Lys Val Trp Ile Ala Ser Ser Phe Val Thr Leu Tyr  
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Lys

<210> 22  
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<220>  
<221> misc\_feature  
<222> (82)..(1093)  
<223> Nucleotides 82, 601, 628, 641, 655, 692, 725, 774,  
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946, 959, 965, 995, 999, 1002, 1028, 1043, 1054,  
1075, 1093 are n wherein n = a or g or c or t/u.

<220>  
<221> misc\_feature  
<222> (1515)..(4574)  
<223> Nucleotides 1515, 2166, 2216, 2265, 2345, 2533,  
2870, 2917, 3077, 3337, 3356, 3618, 3627, 3754,  
3810, 3819, 3884, 3893, 4494, 4503, 4524, 4533,  
4568, 4574 are n wherein n = a or g or c or t/u.

<220>  
<221> misc\_feature  
<222> (4597)..(5708)  
<223> Nucleotides 4597, 4654, 4724, 4741, 4719, 4852,  
5027, 5233, 5546, 5565, 5567, 5575, 5578, 5618,  
5619, 5650, 5669, 5672, 5677, 5683, 5694, 5704,  
5708 are n wherein n = a or g or c or t/u.

<220>  
<221> misc\_feature  
<222> (5732)..(5872)  
<223> Nucleotides 5732, 5741, 5754, 5758, 5772, 5778,  
5780, 5784, 5788, 5802, 5804, 5808, 5813, 5820,  
5824, 5832, 5834, 5836, 5854, 5858, 5863, 5872 are  
n wherein n = a or g or c or t/u.

<220>  
<221> misc\_feature  
<222> (5875)..(6863)  
<223> Nucleotides 5875, 5889, 5915, 5922, 5940, 5990,  
6006, 6011, 6344, 6401, 6416, 6596, 6600, 6608,  
6612, 6712, 6748, 6753, 6756, 6762, 6830, 6844,  
6847, 6863 are n wherein n = a or g or c or t/u.

<220>  
<221> misc\_feature  
<222> (6910)..(7395)  
<223> Nucleotides 6910, 6965, 6968, 7070, 7116, 7179,  
7291, 7322, 7325, 7345, 7351, 7359, 7387, 7395 are  
n wherein n = a or g or c or t/u.

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 <213> Musa acuminata

<220>  
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 <222> (82)..(959)  
 <223> Nucleotides 82, 601, 628, 640, 655, 692, 725, 774,  
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 946, 959

<220>  
 <221> misc\_feature  
 <222> (965)..(3356)  
 <223> Nucleotides 965, 995, 999, 1002, 1028, 1033, 1054,  
 1075, 1093, 1515, 2166, 2216, 2265, 2345, 2533,  
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<220>  
 <221> misc\_feature  
 <222> (3618)..(5027)  
 <223> Nucleotides 3618, 3627, 3754, 3810, 3819, 3884,  
 3893, 4494, 4503, 4524, 4533, 4568, 4574, 4597,  
 4654, 4724, 4741, 4759, 4852, 5027 are n wherein n  
 = a or g or c or t/u.

<220>  
 <221> misc\_feature  
 <222> (5253)..(5758)  
 <223> Nucleotides 5253, 5546, 5565, 5567, 5575, 5578,  
 5618, 5619, 5650, 5669, 5672, 5677, 5683, 5694,  
 5704, 5708, 5732, 5741, 5754, 5758 are n wherein n  
 = a or g or c or t/u.

<220>  
 <221> misc\_feature  
 <222> (5772)..(5889)  
 <223> Nucleotides 5772, 5778, 5780, 5784, 5788, 5802,  
 5804, 5808, 5813, 5820, 5824, 5832, 5834, 5836,  
 5854, 5858, 5863, 5872, 5875, 5889 are n wherein n  
 = a or g or c or t/u.

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<220>  
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 6748, 6753, 6756, 6762, 6830, 6844 are n wherein n  
 = a or g or c or t/u.

<220>  
 <221> misc feature  
 <222> (6847)..(7395)  
 <223> Nucleotides 6847, 6863, 6910, 6965, 6968, 7070,  
 7116, 7179, 7291, 7322, 7325, 7345, 7351, 7359,  
 7387, 7395 are n wherein n = a or g or c or t/u.

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<212> PRT

<213> Musa acuminata

<400> 24

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Gly Ser Phe Thr Ala Gly Arg Asn Pro Phe Leu Tyr Ile Ser Thr Thr  
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Asn Ala Glu Gly Lys Pro Gly Gly Leu Ser Ala Pro Ala Gly Cys Ala  
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Val Ala Ser Thr Ala Gly Ala Val Thr Arg Ile His Thr Ala Ala Lys  
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Asp Ala Arg Ala Asn Ala Ala Val Ala Ala Val Ala Ala

100

105

110

Trp Pro Arg Ser Ser Ala Pro Pro Ser Ser Ser Arg Cys Ser Ile Ala  
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725

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735

Ser Ser Trp Gly Arg Phe Tyr Thr Tyr Ser Cys Met Ser Tyr Ile Val  
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Phe Met Cys Leu Ser Lys Ser Ile Lys Leu Glu Ser Asn Lys Thr Ile		1220	1225	1230
Lys Val Gly Arg Pro Leu Ser Ser Met Ser Arg Ser Ser Thr Phe Gln		1235	1240	1245
His Arg Ala Glu Arg Ser Tyr Leu Thr Leu Thr Cys Pro Ser Gly Arg		1250	1255	1260
Arg His Arg Leu Ala Glu Thr Lys Gly Gln Ser Pro Asn Ser His Ser		1265	1270	1275
Lys Asp Glu Phe Ile Phe Ile Arg Ala Leu Gln Ser Cys Leu Ile Ile		1285	1290	1295
Phe Tyr Tyr Tyr Tyr Tyr Tyr Leu Asn Gly Lys Phe Thr Glu Tyr Ile		1300	1305	1310
Asp Ile Leu Val Ser Ile Lys Tyr Phe Lys Lys Arg Glu Lys Val Asp		1315	1320	1325
Leu Ile Leu Gly Phe Leu Leu Ala Ile Lys Val Phe Ser Asn Phe Gln		1330	1335	1340
Asn Val Ser Asn Glu Pro Val Gly Leu Val Tyr Gly Tyr Asp Glu Ile				

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1970

1975

1980

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Lys Met Leu Glu Ile Lys Leu Phe Ile Phe Tyr Asn Tyr Lys Tyr Phe  
 2085 2090 2095

Asn Ile Phe Phe Asn Leu Lys Asp Pro Lys Lys Ser Xaa Tyr Lys Asp  
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Phe Ile Tyr Gly Leu Gly Tyr Xaa Xaa Xaa Ile Xaa Lys Ile Asn Ile  
 2115 2120 2125

Leu Leu Ile Leu Arg Ile Leu Lys Lys His Asn Tyr Lys Asp Phe Leu  
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Tyr Gly Xaa Gly Tyr Gln Xaa Xaa Ile Val Lys Ile Xaa Ile Asn Cys  
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Ile Lys Leu Lys Tyr Lys Tyr Ile Xaa Ile Met Ile Ser Arg Met Trp  
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Arg Leu Asp Leu Glu Ile Glu Val Glu Thr Xaa Xaa Glu Ile Met Leu  
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Ile Met Gly Asn Phe Leu Leu Phe Pro Arg Arg Pro Trp Lys Pro Asn  
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Ile Arg Asn Arg Ser Cys Asn Asn His Val Ile Ile Xaa Glu Leu Val  
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Val Val Ile Leu Arg Pro Gln Ile Thr Val Phe Xaa Gln Gly Thr Asn  
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Ile Asn Glu Ser Asn Val Val Ser Ile Leu Phe Tyr Thr Phe Ile Pro  
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Xaa Ser Arg Cys Ser His Asp Leu Ala His Pro Lys Cys Ile Arg Ser  
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Leu Ile Pro Leu Arg Trp Ser Val Leu Thr Arg Asp Leu Val Glu Gly  
 2275 2280 2285

Ala Val Ser Phe Xaa Tyr Val Glu Val Lys Asp His Leu Tyr Xaa Xaa  
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Asn Ser Xaa Gly Val Pro  
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Phe Leu Ser Lys Asp Ser Pro Leu Arg Phe Pro Thr Phe Thr Ser Phe  
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Gly Pro Glu Ala Ser Gln Arg Ala Gly Ile His Phe Ser Ile Ala Pro  
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Met Arg Lys Ala Ser Arg Gly Gly Ser Leu Pro Arg Arg Ala Val Leu  
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Pro Val Arg Leu Val Arg His Gly Ser Ile Leu Arg Pro Arg Met Pro  
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Glu Pro Met Arg Arg Arg Arg Arg Arg Trp Gln Arg Gly Leu Asp His  
 100 105 110

Gln Leu Leu Pro Leu Arg Ala Asp Ala Glu Ala Ser Gln Arg Arg Ser  
 115 120 125

Leu Pro Arg Gln Gly Phe Leu His Val Gln Arg Leu His Arg Arg Arg  
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Gln Leu Leu Gln Arg Val Arg Asp Asp Arg Arg Arg Pro Lys Lys Xaa  
 145 150 155 160

Lys Glu Ile Ala Ala Phe Leu Ala Xaa Thr Ser His Xaa Thr Thr Gly  
 165 170 175

Asn Ser His Ile Ser Arg Ser Ser Thr Val Tyr Gly Ile Xaa Asn Met  
 180 185 190

Phe Gly Val Trp Gln Val Gly Xaa Arg Arg Ala Arg Trp Ser Val Arg  
 195 200 205

Leu Gly Leu Leu Leu Arg Pro Xaa Thr Lys Pro Ser Ser Xaa Tyr Cys  
 210 215 220

Val 225	Pro	Xaa	Pro	Xaa	Gly 230	Arg	Ala	Leu	Gln	Gln 235	Lys	Ile	Leu	Arg	Pro 240
Lys	Pro	Xaa	Gln	Ile 245	Ser	Xaa	Xaa	Ala	Xaa 250	Phe	Xaa	Gln	Phe	Xaa 255	Ala
Ala	Ile	Glu	Phe 260	Thr	Thr	Met	Pro	Phe 265	Leu	Thr	Gln	Gln	Ser 270	Asp	Val
Xaa	Cys	Val 275	Gln	Gln	Xaa	Gln	Xaa 280	Arg	Ala	Gly	Arg	Glu 285	Ser	His	Arg
Phe	Xaa 290	Xaa	Xaa	Gln	Gln	Pro 295	Arg	Pro	Gly	Gly	His 300	Xaa	Arg	Asp	His
Leu 305	Xaa	Gln	Asp	Gly	Ser 310	Val	Val	Leu	Asp	Asp 315	Ser	Ser	Val	Ala	Gln 320
Ala	Val	Val	Pro	Arg 325	Arg	Asp	Asn	Arg	Glu 330	Leu	Asp	Ala	Ile	Gln 335	Arg
Arg	Pro	Gly	Gly 340	Arg	Lys	Ala	Ser	Gly 345	Leu	Arg	Cys	His	His 350	Gln	His
His	Gln	Trp 355	Arg	Val	Gly	Val	Arg 360	Glu	Arg	Val	Arg	Cys 365	Gln	Gly	Gly
Gly	Asp 370	Arg	Leu	Leu	Gln	Glu 375	Val	Leu	Arg	Leu	Ala 380	Gly	Gly	Glu	Leu
Arg 385	Arg	Gln	Leu	Gly	Leu 390	Leu	Gln	Pro	Glu	Thr 395	Leu	Cys	Phe	Tyr	Ser 400
Ser	Tyr	Ser	His	Ile 405	Leu	Ala	Val	Ser	Tyr 410	Gly	Asp	Asn	Leu	Glu 415	Cys
Tyr	Asn	Gln	Arg 420	Pro	Phe	Thr	Ser	Asp 425	Thr	Thr	Val	Thr	Asn 430	Pro	Cys
Asn	Asn	Ala 435	Ile	Asn	Ala	Ile	Thr 440	Glu	Ile	Ala	Thr	Pro 445	Val	Asp	Cys
Arg	Ser 450	Cys	Gly	Gly	Ser	Leu 455	Gln	Lys	Leu	Xaa	Tyr 460	Ile	His	Gly	Pro
Gln 465	Leu	Ser	Leu	Thr	Val 470	Ile	Ile	Cys	Ile	His 475	Gln	Met	Ser	Ser	Asn 480
Val	Leu	Glu	Val	Asn 485	Ala	Tyr	Ser	Ile	Gly 490	Lys	Met	Lys	Met	Leu 495	Glu
Ile	Lys	Leu	Ile 500	Ile	Phe	Leu	Leu	Ile 505	Phe	Tyr	Ile	Phe	Ser 510	Arg	Ser
Lys	Ser	Asn 515	Tyr	Lys	Asp	Phe	Ile 520	Tyr	Gly	Leu	Gly	Tyr 525	Glu	Tyr	Leu
Ile	Ile	Lys	Ile	Asn	Ile	Leu	Phe	Asn	Leu	Lys	Asp	Leu	Ile	Ile	Ser

540

Gly Gly Cys Gln Asn Met Leu Tyr His Ser Leu Pro Thr Lys Glu Leu  
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Cys His Arg Arg Ile Val Asp Thr Ala Trp Val Leu Trp Ser Val Leu  
 850 855 860  
 Val Arg Leu Ser Trp Val Asp Tyr Phe Ile Lys Leu Ala Xaa Cys Trp  
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 Ser Leu Arg Trp Gly Val Cys Ser Phe Arg Phe Val Ala Met Asp Cys  
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 Leu Leu Xaa His Trp Thr Lys Glu Val Leu Cys Asn Ile Lys Ile Gly  
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 Arg His Lys Tyr Tyr Phe Gln Ile Leu Phe Ser Leu Ser Pro Ser Pro  
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 Pro Leu Pro Phe Ser Ile Phe Ser Ile Leu Ser His Asn Ile Arg Thr  
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1155

1160

1165

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Val Asp Phe Pro Ser Asn Gln Ser Ser Trp Asn Arg Ile Arg Arg Leu  
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Lys Gly Asp Asp His Val Gln Cys His Ala His Gln His Asn Ser Asn  
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Thr Val Gln Lys Asp Leu Ile Leu His Leu Ala His Pro Ala Ala Gly  
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Phe Val Tyr Lys Lys Ile Ile Asn Leu Ile Phe Ile Phe Pro Leu Ile  
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Ser Gly His Asp Ile Ser Ser Asn His Val Met Xaa Asp Glu Xaa His  
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Ile Phe Xaa Lys Leu Xaa Ile Glu Lys Lys Asp Tyr Tyr Pro Phe Tyr  
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Leu Ser His Gln Ile Lys Tyr Arg Xaa Lys Ser Cys Phe Leu Asn Ser  
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Lys Asn Asn Leu Pro Leu Leu Ile Ile Ser Leu Leu Ile Ser Ile Xaa  
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Ile Tyr Ile Tyr Xaa Tyr Ile Asn Phe Xaa Ile Phe Leu Asn Leu Asn  
 1445 1450 1455

Leu Ser Lys Lys Asp Lys Leu Asn Phe Cys Ile Ile Met Val Glu Leu  
 1460 1465 1470



Author	Year	Country	Sample Size	Study Design	Findings
Smith et al.	2001	USA	1,200	Longitudinal	Increased risk of depression in children of parents with mental illness.
Johnson et al.	2003	UK	800	Cross-sectional	Higher rates of anxiety disorders in offspring of parents with anxiety.
Lee et al.	2005	Canada	1,500	Family Study	Genetic factors play a significant role in the transmission of bipolar disorder.
Wong et al.	2007	Australia	900	Case-control	Increased risk of schizophrenia in children of parents with schizophrenia.
Chen et al.	2009	China	2,100	Longitudinal	Early onset of substance use in children of parents with substance abuse.
Miller et al.	2011	USA	1,100	Family Study	Increased risk of major depressive disorder in offspring of parents with depression.
Nguyen et al.	2013	Vietnam	1,300	Cross-sectional	Higher rates of PTSD in children of parents with PTSD.
Patel et al.	2015	India	1,400	Longitudinal	Increased risk of bipolar disorder in children of parents with bipolar disorder.
Kim et al.	2017	South Korea	1,600	Family Study	Genetic factors play a significant role in the transmission of schizophrenia.
Roberts et al.	2019	USA	1,700	Cross-sectional	Higher rates of anxiety disorders in offspring of parents with anxiety.
Thompson et al.	2021	UK	1,800	Longitudinal	Increased risk of depression in children of parents with mental illness.

1780

1785

1790

Gly Val Thr Ala Ser Ser Xaa Asn Arg Thr Leu Ile Gly Leu Leu Arg  
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Arg Gln Leu Ala Xaa Ala Val Arg Cys Xaa Gln Xaa Ile Leu Arg Pro  
 1810 1815 1820

Lys Pro His Pro Asn Leu Ile Gln Leu Gln Leu Arg Ala Gly Arg Glu  
 1825 1830 1835 1840

Asn His Arg Leu Arg Pro Ala Gln Gln Pro Arg Pro Gly Gly His Arg  
 1845 1850 1855

Pro Asp His Leu Leu Gln Asp Gly Ser Val Val Leu Asp Asp Ser Ser  
 1860 1865 1870

Val Ala Gln Ala Val Val Pro Arg Arg Asp Asn Arg Glu Leu Asp Ala  
 1875 1880 1885

Ile Gln Arg Arg Pro Gly Gly Arg Lys Ala Ser Gly Leu Arg Cys His  
 1890 1895 1900

His Gln His His Gln Trp Arg Val Gly Val Arg Glu Arg Val Arg Cys  
 1905 1910 1915 1920

Gln Gly Gly Gly Asp Arg Leu Leu Gln Xaa Val Leu Arg Leu Ala Gly  
 1925 1930 1935

Gly Glu Leu Arg Arg Gln Leu Gly Leu Leu Gln Pro Xaa Ser Leu Tyr  
 1940 1945 1950

Leu Xaa Arg Tyr Tyr Val Arg Ile His Val Ile Thr Gln Thr Leu Leu  
 1955 1960 1965

Leu Lys Arg Leu Arg Glu Leu Ile Val Glu Val Ala Glu Glu Ile Phe  
 1970 1975 1980

Asn Lys Ser Ala Glu Gln Val His Gly Pro Gln Ser Ser Leu Ile Val  
 1985 1990 1995 2000

Val Arg Cys Ile His Gln Met Ser Trp Ser Xaa Xaa Met Arg Xaa Xaa  
 2005 2010 2015

Ser Val Asn Arg Cys Asn Lys Asn Tyr Leu Phe Phe Ile Ile Ile Asn  
 2020 2025 2030

Ile Leu Ile Tyr Phe Leu Ile Leu Lys Ile Leu Lys Asn Leu Ile Ile  
 2035 2040 2045

Arg Ile Leu Tyr Met Asp Trp Asp Thr Xaa Lys Xaa Xaa Leu Xaa Lys  
 2050 2055 2060

Leu Ile Tyr Phe Ser Gly Ser Lys Asn Ile Ile Ile Arg Ile Phe Tyr  
 2065 2070 2075 2080

Met Asp Xaa Asp Thr Asn Xaa Xaa Leu Lys Phe Xaa Tyr Lys Ile Val  
 2085 2090 2095

Lys Ser Lys Asn Asn Thr Lys Asn Ile Xaa Ser Tyr Arg Glu Cys Gly  
2100 2105 2110

Ala Ile Ser Arg Ser Arg Leu Arg Leu Xaa Xaa Lys Leu Cys Ser Trp  
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Glu Ile Phe Phe Cys Phe Gln Asp Asp Asp Arg Gly Asn Leu Thr Ser  
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Gly Val Arg Thr Ile Trp Pro Ile Pro Ser Ala Asp His Tyr Asp Leu  
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Tyr Val Gly Ala Cys Pro Glu Ile Leu Arg Gly His Arg Ser His Xaa  
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Ser Thr Trp Arg Leu Lys Ile Thr Phe Ile Xaa Xaa Leu Val Asp Ser  
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Lys Leu Glu Val Asp Leu Xaa Arg Arg Ser Val Ser Leu Gly Thr Leu  
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Gly Xaa

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Thr Arg Leu Cys Asp Phe Pro His Ser Pro His Leu Val His Arg Lys  
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Leu His Ser Gly Gln Glu Ser Ile Ser Leu Tyr Lys His His Leu Pro  
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Pro Thr Pro Pro Pro Leu Pro Leu Leu Arg Arg Met Lys Ala Leu Leu  
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Leu Val Ile Phe Thr Leu Ala Ser Ser Leu Gly Ala Phe Ala Glu Gln  
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Cys Gly Arg Gln Ala Gly Gly Ala Leu Cys Pro Gly Gly Leu Cys Cys  
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 Cys Gln Ser Gln Cys Gly Gly Ser Gly Gly Ser Gly Gly Gly Ser Val  
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 Pro Asp Gly Pro Tyr Ala Leu Gly Tyr Cys Phe Val Gln Xaa Gln Asn  
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 Pro His Arg Xaa Thr Ala Ser Xaa Leu Pro Xaa Ala Val Arg Cys Ser  
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Trp Ser Ala Thr Thr Arg Asp Pro Leu Leu Ser Pro Ile Leu Leu Arg	450	455	460
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Thr Val Glu Val Ala Glu Glu Val Phe Asn Lys Ser Leu Xaa Thr Tyr	485	490	495
Met Ala His Asn Tyr Arg Pro Ser Tyr Ala Ser Ile Lys Cys Pro Gln	500	505	510
Met Ser Trp Ser Lys Met Arg Ile Arg Ser Val Lys Arg Cys Asn Lys	515	520	525
Asn Leu Phe Phe Tyr Asn Tyr Lys Tyr Phe Asn Ile Phe Phe Asn Leu	530	535	540
Lys Asp Pro Lys Asn Leu Ile Ile Arg Ile Leu Tyr Met Asp Trp Asp	545	550	555
560			
Thr Lys Asn Ile Leu Lys Leu Ile Tyr Phe Leu Ile Leu Lys Ile Leu	565	570	575
Val Phe Ser Ile Trp Ile Gly Ile Leu Thr Arg Phe Thr Tyr Lys Asn	580	585	590
Phe Asn Ile Lys Ile Leu Asn Leu Lys Ile Lys Ile Leu Lys Ile Ser	595	600	605
Lys Tyr Asn Gly Asn His Glu Ile Glu Asn Val Met Ile Glu Ile Met	610	615	620
Arg Ser Arg Leu Arg Val Lys Arg Lys Leu Arg Ser Trp Glu Ile Ser	625	630	635
640			
Phe Cys Leu His Gly Arg Asp Gly Asp Arg Gly His Leu Thr Ser Thr	645	650	655
Thr Gly Met Gln Pro Cys Cys His Met Leu Ala Cys Leu Ile Ser Tyr	660	665	670
Asp His Glu Ser His Ser Leu His Glu Tyr Leu Ser Gln Leu Ser Ile	675	680	685
Thr Val Leu His Leu Cys Thr Ile Xaa Glu Val Phe Val Trp Leu Asp	690	695	700
Pro Ser Arg Val Tyr Gly Leu Pro Xaa Pro Gly Ala Cys Pro Glu Val	705	710	715
720			

1000 900 800 700 600 500 400 300 200 100

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Leu	Ser	Val	Gly	Cys	Leu	Tyr	Lys	Gly	Arg	Asn	His	Glu	Gly	Asp	Ser	740	745	750	
Leu	Asp	Leu	Phe	Asn	Ile	Ala	Ser	Lys	Ser	Trp	Ser	Tyr	Val	Tyr	Glu	755	760	765	
Val	Arg	Pro	Pro	Met	Leu	Phe	Leu	Gly	Ser	Leu	Leu	Tyr	Leu	Phe	Leu	770	775	780	
His	Val	Ile	Ile	His	Ser	Ser	Phe	Asn	His	Leu	Gln	Ser	Ser	Ser	Tyr	785	790	795	800
Val	Gly	Cys	Met	His	Cys	Leu	Ile	Tyr	Ser	Ile	Gln	Xaa	Arg	Ser	Thr	805	810	815	
Leu	Leu	Pro	Thr	Tyr	Tyr	Val	Ala	Gln	Tyr	Ile	Val	Val	Leu	Ser	His	820	825	830	
Thr	Ala	Ser	Ser	Lys	Ala	Cys	Ala	Glu	Glu	Leu	Cys	Gln	Val	Val	Gly	835	840	845	
Trp	Pro	Arg	Ala	His	Gly	Ile	Glu	Leu	Ala	Arg	Tyr	Asn	Thr	Ser	Ala	850	855	860	
Gly	Tyr	His	Ala	Glu	Ser	Ile	Val	Val	Val	Asp	Met	Ser	Cys	Gly	Val	865	870	875	880
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Arg	Arg	Leu	Gly	Ser	Ile	Ala	Leu	Lys	Ser	Gly	Glu	Gly	Ile	Xaa	Gly	980	985	990	
Val	Gln	Phe	Asp	His	Val	Glu	Val	Asn	Lys	Arg	Thr	Cys	Gln	Glu	Val	995	1000	1005	
Trp	Leu	Asp	Arg	Val	Lys	Ala	Arg	Glu	Cys	Val	Cys	Arg	Gly	Leu	Phe	1010	1015	1020	
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His Val Ser Arg Arg Ile Tyr Leu Leu Arg Gly Leu Leu Asn His Val	1045	1050	1055
Glu Ala Ile Lys Cys Thr Cys Tyr Glu Val Trp Leu Asp Leu Leu Asp	1060	1065	1070
Asn Gly Arg Xaa Val Arg Arg Asp Xaa Pro Arg Leu Ser Trp Gln Gly	1075	1080	1085
Leu Val Asp Thr Cys Ser Thr Ile Asp Ala Tyr Arg Trp Ile Asp Asp	1090	1095	1100
Leu Val Asp Lys Asp Leu Arg Leu Ser Gly Gln Trp Met Pro Ile Ser	1105	1110	1115
Lys Lys Gly Trp Leu Glu Ile Asn Lys Asp Gln Ile Ile Asn Ile Asn	1125	1130	1135
Leu Ser Asn Thr Trp Thr His Ile Ser Glu Lys Gly Arg Ile Glu Ile	1140	1145	1150
Asn Lys Asp Gln Ile Ile Asn Ile Ser Leu Asn Ser Xaa Tyr Xaa Ile	1155	1160	1165
Gly Gln Lys Arg Tyr Tyr Val Ile Leu Lys Leu Gly Gly Thr Asn Ile	1170	1175	1180
Ile Ser Lys Tyr Phe Ser Pro Ala Leu Arg His His Cys His Phe Asn	1185	1190	1195
Leu Phe Phe Leu Tyr Asn Tyr Xaa Ile Thr Phe Val His Glu Ile His	1205	1210	1215
Lys Pro Ser Thr Cys Phe Ser Lys His Xaa Asp Tyr Xaa Asp Thr Arg	1220	1225	1230
Ser His Asn Ile Ala Tyr Leu Asn Met Met Glu Met Asn Phe Ser Trp	1235	1240	1245
Ser Xaa Tyr Leu Xaa Asn Gly Ser Gly Gln Ala Arg Leu Gly Trp Leu	1250	1255	1260
His Val His Val Leu Thr Phe Gln Val Ile Asn Gln Ala Gly Ile Glu	1265	1270	1275
Asp Asp Ser Arg Ala Met Thr Ile Lys Phe Asn Val Thr Leu Ile Asn	1285	1290	1295
Ile Ile Pro Thr Pro Cys Arg Lys Ile Leu Ser Tyr Ile Asp Leu Pro	1300	1305	1310
Ile Arg Pro Pro Ala Ser Ile Gly Gly Asn Glu Gly Ser Val Ser Gln	1315	1320	1325
Phe Thr Phe Lys Gly Arg Ile His Phe His Gln Met Ser Thr Ser Val	1330	1335	1340

Leu Leu Asp Tyr Ile Leu Leu Leu Leu Leu Leu Ile Glu Trp Val  
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Tyr Arg Ile Tyr Arg Tyr Phe Ser Phe Asn Lys Ile Phe Lys Met Ile  
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Lys Gly Glu Gly Gly Phe Asp Leu Arg Ile Phe Ile Val Ser Asn Lys  
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Cys Xaa Met Ser Xaa Asn Ile Phe Phe Asn Asn Xaa Asn Tyr Xaa Arg  
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Phe Xaa Tyr Arg Phe Thr Asn Lys Lys Asp Tyr Asn Arg Ile Lys Ser  
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Asn Thr Glu Xaa Asn His Ala Phe Asp Leu Ile Arg Lys Ile Ile Phe  
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Ser Lys Xaa Tyr Phe Ile Asn Ile Tyr Gln Asn Lys Lys Ile Asn Ile  
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Ser Ser Ala Ser Cys Ser Lys Cys Lys Asn Leu Asn Xaa Asp Leu Glu  
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His Lys Ile Pro Asn His Tyr Phe Tyr Leu Met Lys Thr Lys Pro Tyr  
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Lys Arg Ile Leu Leu Tyr Ile Tyr Ile Tyr Ile Tyr Tyr Phe Thr Tyr  
1570 1575 1580

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1620 1625 1630

Glu Gly Ser Ala Thr Val Asp Arg Ser Cys Pro Gly Ile Val Cys Arg  
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1650

1655

1660

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Ala Ser Gln Arg Ala Gly Ile His Phe Ser Ile Ala Pro Pro Pro Thr  
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Met Arg Lys Ala Ser Arg Gly Gly Ser Leu Pro Arg Arg Ala Val Leu  
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2275

2280

2285

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&lt;210&gt; 27

&lt;211&gt; 4924

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&lt;213&gt; Musa acuminata

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&lt;221&gt; misc feature

&lt;222&gt; (879)..(4119)

<223> Nucleotides 879, 3691 and 4119 are n wherein n = a  
 or g or c or t/u.

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 <223> Nucleotides 879, 3691 and 4119 are n wherein n = a  
 or g or c or t/u.

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 caaggaaaat cactagatac gagagggctg gtaatcctac tcccaacttc cacttttatg 4740  
 aaagaccatt aaaaggagag atttaagaag gtttgtgctg tgttcatatt aatatctggt 4800  
 tctaactaag aagaatacgt ggctaagagt gaaggggaagg gagacacaat accaatagca 4860  
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 gctg 4924

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 <211> 1568  
 <212> PRT  
 <213> Musa acuminata

<400> 29  
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 Val Lys Arg Cys Thr Cys Leu Arg Trp Thr His Leu Val Ser Phe Gly  
 35 40 45  
 Lys Val Arg Lys Ser Ala Glu Tyr Phe Trp Ile Leu Ser Leu Gly Trp  
 50 55 60  
 Cys Leu His Glu Pro Gln Glu Ser Ser Lys Tyr Gln Lys Pro Asn His  
 65 70 75 80  
 Lys Leu Lys Cys Asp Ile His Phe Cys Leu Met His Lys Thr Gly His  
 85 90 95  
 Ser Pro Leu Cys Leu Lys Gln Lys His Ser Ser Pro Ile His Pro Ile  
 100 105 110  
 Arg Ser Ser Glu Glu Lys Ile Phe Glu Ile His Phe Arg Gln Thr Lys  
 115 120 125  
 Ala Arg Asn Pro Trp Lys Gly Arg Ser Ser Tyr Glu Phe Ser Asn Thr

130

135

140

Cys 145	Asn	Ser	Thr	His	Thr 150	Val	Asp	Val	Asn	Asp 155	Pro	His	Ala	Leu	Ser 160
Leu	Leu	Gly	Ile	Lys 165	Pro	Asn	Met	Arg	Val 170	Ser	Leu	Ala	Leu	Ile 175	Pro
Ile	Val	Arg	Ile 180	Arg	Val	Ala	Leu	Arg 185	Glu	Gly	Gly	Ser	Glu 190	Leu	Val
Gln	Trp	Ile 195	Lys	Thr	Tyr	Lys	Phe 200	Lys	Asn	Glu	Phe	Val 205	Asn	Thr	Arg
Arg	Phe 210	Arg	Phe	Asn	Ser	Asn 215	Leu	Ser	Arg	Lys	Pro 220	Lys	Val	Asn	Ser
Ser 225	Val	Asn	Asn	Asn	Phe 230	Gly	Lys	Val	Arg	Thr 235	His	Thr	Phe	Lys	Glu 240
His	Thr	Asn	Leu	Lys 245	Trp	Phe	Gly	Gln	Asn 250	Asp	Leu	His	Pro	Leu 255	Val
Lys	Pro	Ser	Ser 260	Lys	Arg	Leu	Pro	Thr 265	Ser	Thr	Ser	Lys	Ser	Leu	Arg
Gly	Arg	Thr 275	Asn	Thr	Ser	Leu	Thr 280	Thr	Phe	Tyr	Asn 285	Gly	Ser	Tyr	Ser
Tyr	Lys 290	Phe	Ser	Thr	Arg	Lys 295	Lys	Glu	Val	Asn	Met 300	Gln	Ala	Ile	Glu
Asn 305	Lys	Thr	Cys	Arg	Leu 310	Cys	Gly	Phe	Phe	Ser 315	Gln	Ser	Ile	Ala	Ser 320
Gln	Lys	Leu	Tyr 325	Ser	Leu	Leu	Arg	Ile 330	Glu	Gly	Tyr	Leu	Thr 335	Pro	Arg
Gly	Phe	Lys 340	Phe	Gly	Leu	Gln	Ile 345	Ser	Asn	Ala	Leu	Gly	Phe 350	Pro	Arg
Leu	Pro	Val 355	Pro	Pro	Pro	Val	Ser 360	Val	His	Trp	Thr 365	Val	Tyr	Arg	Cys
His 370	Arg	Arg	Thr	Ser	Arg	Val 375	Leu	Gly	Gly	Ala 380	Thr	Ala	Thr	Phe	Ser
Ala 385	His	Trp	Leu	Asp	Ser 390	Lys	Leu	Asp	Pro	Asn 395	Gln	Ser	Glu	Leu	Gly 400
Ser	Asn	Pro	Val 405	Thr	Gly	Leu	Asp	Pro	Leu 410	Ile	Leu	Thr	Leu	Ile 415	Ile
Cys	Lys	Leu	Arg 420	Asn	Lys	Tyr	Ser 425	Pro	Lys	Gln	Val	Phe	Asn 430	Arg	Gln
Thr	Ser	Ser 435	Leu	Leu	Pro	Ala	Ile 440	Phe	Arg	Gln	Thr	Ser	Asp 445	Ile	Pro

Leu Asp Phe Phe Arg Thr Pro Ser Arg Val Pro Ile Leu Trp Arg Val  
450 455 460

Arg Val Ala Glu Pro Ser Arg Ser Pro Gln Thr Ala Asp Asp Leu Phe  
465 470 475 480

Gly Arg Leu Ser Lys Thr Ser Thr Ser Pro Arg Phe Leu Leu Gly Trp  
485 490 495

Phe Arg Gln His Leu Arg Asn Phe Gly Leu Leu Glu Cys Pro Ser Asn  
500 505 510

Leu Thr Pro Val Gly Leu Leu Tyr Ile Phe Arg Leu Ser Leu Ile Leu  
515 520 525

His Thr Leu Asn Asn Met Asp Ile Asn Pro Ile Asn Phe His His Gln  
530 535 540

Asn Ser Thr Phe Asn Lys His Pro Tyr Ser Ile Thr His Gln Ala Ile  
545 550 555 560

Val Thr Leu Ser Thr Val Ile Thr Arg Ser Arg Val Met Ile Gln Val  
565 570 575

Val Ser Leu Ile Gly Arg Thr Arg Ile Pro Tyr Pro Asn Pro Val Phe  
580 585 590

Ser Thr Leu Leu Ala Tyr Pro Ser Leu Phe Leu Leu Leu Lys Glu  
595 600 605

Phe Lys Ser Lys Gln Ile Gln Asn Asn Thr Val Arg His Cys Asp Met  
610 615 620

Leu Val Ser Gly Lys His Phe Ala His Pro Gln Thr Ser Ser Ala Ser  
625 630 635 640

Ser Pro Thr Phe Ser Tyr Ile Thr Met Ser His Gly Phe Val Asp Asp  
645 650 655

Arg Pro Pro Gln Ala Cys Leu Trp Leu Cys Leu Thr Glu Arg Glu Arg  
660 665 670

Gln Thr Asp Ser Leu Leu Ile His Tyr Gly Asp Pro Ile Ala Ser Phe  
675 680 685

Ala Ala Val Ile Cys Val Pro Asp Ala Cys Ala His Gly Lys Thr Ala  
690 695 700

Gly Pro Ala Gln Leu Met His Trp Arg Leu Leu Gly Thr Lys His Arg  
705 710 715 720

Arg Gly Lys Leu Ser Arg Cys Leu Cys His Arg Gln Leu Arg Ile Arg  
725 730 735

Glu His Arg His Pro Phe Gln Val Trp His Gly Pro Asn Ser Arg Asp  
740 745 750

Gln Pro Arg Arg Pro Leu Pro Ser Glu Gln Arg Leu Arg Ala Leu Glu

755

760

765

Gln Arg Asn Pro Val Leu Pro Gly Ala Trp Arg Gln Gly Asp Ala Leu  
 770 775 780  
 His Arg Arg Trp Arg Val Leu Trp Pro Glu Phe His Arg Arg Arg Gln  
 785 790 795 800  
 Gly Arg Ser Val Ile Pro Leu Ala Gln Phe Leu Gly Trp Phe Cys Cys  
 805 810 815  
 Ser Leu Leu Glu Thr Pro Arg Gly Cys Gly Ser Gly Trp His Arg Leu  
 820 825 830  
 Gln His Arg Arg Arg Glu His Arg Thr Leu Thr Cys Arg Phe Pro Gln  
 835 840 845  
 Gly Leu Gln Arg Ala Gly Gly Arg Asn Glu Glu Ser Ser Leu Glu Cys  
 850 855 860  
 Ser Ser Ala Val Ser Phe Pro Gly Leu Leu Ala Trp Gln Arg Thr Gln  
 865 870 875 880  
 Asn Arg Ser Leu Arg Leu Arg Val Gly Ala Val Leu Gln Gln Pro Phe  
 885 890 895  
 Val Pro Phe Leu Pro Glu Arg Tyr Gln Ser Cys Lys Cys Val Gln Gln  
 900 905 910  
 Leu Gly His Val His Pro Cys Ala Lys Ala Val Pro Trp Ala Ser Cys  
 915 920 925  
 Cys Ser Gly Cys Ser Asn Trp Trp Leu His Ser Thr Pro Ser His Ile  
 930 935 940  
 Ser Ser Ser Asp Pro Lys Gly Phe Arg Gln Val Arg Arg Asn His Ala  
 945 950 955 960  
 Val Asp Ile Pro Arg Gln Lys Leu Arg Leu Gln Phe Ser Ser Gln Val  
 965 970 975  
 Pro Arg Val Ser Ser Ala Ser Val Leu Gln His Leu Ile Tyr Ala Gly  
 980 985 990  
 Glu Val Phe Gln Val Asn Leu Asn Gly Val Asp Asp Arg Trp Ser Lys  
 995 1000 1005  
 Thr Pro Ile Ile Met Gly Pro His Pro Tyr Pro Cys Val Ala Thr Leu  
 1010 1015 1020  
 Trp Cys Phe Pro Cys Met Leu Val Phe Ser Ile Ile Gly Val Ser Phe  
 1025 1030 1035 1040  
 Thr Phe Pro Tyr Phe Pro Cys Ser Lys Thr Val Tyr Leu Leu Pro Leu  
 1045 1050 1055  
 Pro Asn Leu Lys Lys Ile Lys Ile Tyr Asn Lys Tyr Pro Leu Phe Phe  
 1060 1065 1070

Phe Phe Arg Gln Ile Tyr Asn Ser Leu Ser Gln Leu Phe Lys Gln Lys  
1075 1080 1085

Ile Ile Leu Phe His Thr Lys Asp Glu Ser Met Ile Ala Gly Leu Leu  
1090 1095 1100

Ser Thr Gly Ala Glu Met Ala Thr Arg Glu Ala Cys Ala Thr Cys Asn  
1105 1110 1115 1120

Tyr Lys Phe Val Asn Ile Val Phe Leu Ala Met Phe Gly Asp Ala Ile  
1125 1130 1135

Leu Pro Ser Gly His Thr Ser Gly Thr Val Ser Trp Glu Val Asn Leu  
1140 1145 1150

Leu Leu Gly Ser Ser Ala Thr Asn Leu Val Arg Phe Phe Ser Met Val  
1155 1160 1165

Ser Thr Ser Thr Ser Lys Val Tyr Leu Ser Ala Xaa Pro Gln Phe Arg  
1170 1175 1180

Leu Arg Val Gly Ala Val Leu Leu His Arg Gln Leu Ala Asp Ala Arg  
1185 1190 1195 1200

Gln Trp Val Leu His Pro Ala Trp Lys Val Phe Pro Gly Leu Pro Ala  
1205 1210 1215

Ala Pro Gln Ala Ala Gly Arg Ser Ser Ile Pro Leu Val Ile Leu His  
1220 1225 1230

Val Ser Tyr His Gln Glu Leu Gln Val Pro Arg Asp Tyr Asn Lys Lys  
1235 1240 1245

Lys Gly Lys Asn Gly Asn Asn Asn Asn Arg Pro Arg Thr Phe Arg Val  
1250 1255 1260

Lys Thr Asn Asp Ser Met Arg Arg Phe Ala Met Asp Met Asp Arg Ser  
1265 1270 1275 1280

Gln Ser Ser Pro Ser Leu Tyr Glu Pro Val Tyr Arg Phe Ser Leu Gln  
1285 1290 1295

Glu Pro Arg Gly Pro Ala Gln Glu Lys Gln Gln Ile Val Val Ser Phe  
1300 1305 1310

Xaa Tyr Lys Pro Asn Gly Ala Val Arg Gln Met Leu Asn Gly Arg Arg  
1315 1320 1325

Ile Asp Leu Gln Ser Lys Ser Glu Glu Asn Arg Ser Gly Pro Pro Thr  
1330 1335 1340

Thr Thr His Ala Ile Arg Pro Leu Pro His Pro Leu His Leu Phe Leu  
1345 1350 1355 1360

Leu Pro Leu Leu Arg Ser Val Ile Phe Cys Val Tyr Pro Ile Ser Phe  
1365 1370 1375

Leu Glu Trp Tyr Pro Ile Leu Ile Ser Ile Val Val Leu Asn His Gln

1380

1385

1390

Phe Trp Phe Lys Arg Met Met Ala Glu Ser Phe Gly Arg Trp Glu Ser  
1395 1400 1405

Asp Pro Leu Phe Ser Ala Ala Glu Val Val Gln Asp Ser Ala Asp Arg  
1410 1415 1420

Phe Phe Leu Ser Phe Ala Gln Leu Cys Gly His Ser Cys Ala Leu Glu  
1425 1430 1435 1440

Asn Leu Leu Tyr Phe Glu Arg Asn Cys Cys Phe Leu Val Leu Ile Ser  
1445 1450 1455

Pro Tyr Lys Ile Cys Phe Arg Phe Ile Ser Glu Asn Val Val Ser Ser  
1460 1465 1470

Met Thr Ile Leu Phe Asn Ser Asn Thr Leu Ser Cys Phe Leu Phe Asn  
1475 1480 1485

Gly Glu Asn Ile Val Pro Phe Ser Asp Leu Cys Ser Pro Asp His Asp  
1490 1495 1500

Glu Gly Arg Lys Tyr Phe Leu Val Ile Phe Leu Ser Lys Phe Phe Gln  
1505 1510 1515 1520

Thr Arg His Lys Tyr Asn Tyr Arg Pro Arg Leu Ile Leu Leu Met His  
1525 1530 1535

Arg Phe Ser Leu Pro Phe Pro Leu Cys Tyr Gly Tyr Arg Cys Tyr Trp  
1540 1545 1550

Leu Leu Asn Ser Trp Gly Ser Ala Trp Val Ile Arg Pro Ala Gly Arg  
1555 1560 1565

<210> 30

<211> 1574

<212> PRT

<213> Musa acuminata

<400> 30

Asp Pro Asn Phe Glu Trp Ile Leu Lys Phe Leu Val Gln Ser Lys Asn  
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Leu Tyr Gln Glu Leu Val His His Pro Asn Gly Val His Val Ser Asp  
20 25 30

Gly Leu Thr Trp Phe His Ser Glu Lys Phe Glu Arg Val His Lys Asn  
35 40 45

Ile Asp Phe Gly Phe Phe His Ser Val Gly Ala Phe Met Ser Asp Leu  
50 55 60

Lys Ser Pro Pro Asn Ile Lys Ser Arg Ile Thr Asn Asn Val Ile Glu







690

695

700

Ile Gly Val Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp 705 710 715 720
Ala Cys Ala Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe 725 730 735
Lys Phe Gly Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys 740 745 750
Asp Pro Arg Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser 755 760 765
Cys Gln Glu Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Gly 770 775 780
Ser Tyr Gly Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr 785 790 795 800
Leu Trp His Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro 805 810 815
Leu Gly Asp Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly 820 825 830
Ser Thr Glu His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn 835 840 845
Glu Gln Glu Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln 850 855 860
Cys Pro Phe Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu 865 870 875 880
Phe Asp Phe Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe 885 890 895
Ser Gln Asn Ala Ile Asn Leu Ala Asn Ala Phe Asn Asn Trp Val Met 900 905 910
Ser Ile Pro Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu 915 920 925
Ala Ala Pro Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys 930 935 940
Val Leu Pro Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu 945 950 955 960
Trp Thr Arg Tyr His Asp Arg Asn Ser Gly Tyr Ser Ser Gln Val Lys 965 970 975
Ser His Val Cys Pro Ala Arg Arg Phe Ser Asn Ile Leu Ser Met Pro 980 985 990
Val Lys Ser Ser Lys Thr Thr Ala Met Ile Gly Gly Arg Lys Leu Arg 995 1000 1005



1315

1320

1325

Asp Gly Gly Ile Ser Arg Val Asn Leu Arg Lys Ile Val Pro Ala Pro  
 1330 1335 1340

Leu Pro Arg Pro Thr Arg Ser Val Leu Ser Pro Thr Pro Tyr Thr Phe  
 1345 1350 1355 1360

Phe Phe Phe Arg Ser Cys Asp Arg Leu Phe Asp Phe Val Tyr Asp Ile  
 1365 1370 1375

Gln Phe Leu Phe Trp Ser Gly Ile Leu Phe Phe Leu Arg Leu Leu Tyr  
 1380 1385 1390

Thr Ile Ser Phe Gly Leu Ser Ala Trp Arg Arg Val Ser Gly Asp Gly  
 1395 1400 1405

Ser Gln Ile Pro Cys Phe Leu Leu Pro Lys Trp Cys Lys Ile Arg Pro  
 1410 1415 1420

Ile Gly Phe Phe Ser His Phe Lys Leu Asn Tyr Ala Val Ile Leu Val  
 1425 1430 1435 1440

Arg Leu Trp Arg Ile Cys Ser Ile Ser Lys Glu Ile Ala Ala Phe Phe  
 1445 1450 1455

Leu Val Pro Ile Lys Phe Ala Phe Gly Ser Glu Tyr Pro Arg Met Ser  
 1460 1465 1470

Tyr Arg Gln Arg Phe Phe Phe Arg Ile Leu Ile Leu Cys Pro Val Phe  
 1475 1480 1485

Cys Asp Leu Met Glu Lys Ile Leu Phe Leu Leu Val Ile Tyr Ala Leu  
 1490 1495 1500

Pro Thr Ile Arg Met Arg Val Glu Gly Glu Asn Thr Phe Trp Phe Ser  
 1505 1510 1515 1520

Ser Leu Asn Ser Ser Lys His Asp Thr Ser Ile Ile Ile Asp Gln Asp  
 1525 1530 1535

Phe Phe Leu Cys Thr Asp Ser His Phe Pro Ser Leu Cys Val Met Val  
 1540 1545 1550

Ile Val Val Thr Asp Gly Cys Leu Thr His Gly Val Ala Pro Gly Ser  
 1555 1560 1565

Val Asp Leu Gln Val Asp  
 1570

&lt;210&gt; 31

&lt;211&gt; 1562

&lt;212&gt; PRT

&lt;213&gt; Musa acuminata

&lt;400&gt; 31

Arg Ile Pro Thr Phe Arg Asn Gly Ser Asn Phe Ser Tyr Lys Phe Lys

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Val Arg Lys Ile Phe Thr Lys Ser Phe Glu Ser Ile Asp Asp Ile Arg	20	25	30
Glu Thr Val Tyr Met Ser Pro Met Asp Ser Leu Gly Phe Ile Arg Lys	35	40	45
Ser Ser Lys Glu Cys Ile Arg Ile Leu Ile Leu Asp Ser Phe Thr Arg	50	55	60
Leu Val Pro Ser Val Thr Ser Arg Val Leu Gln Ile Ser Lys Ala Glu	65	70	75
Ser Gln Ile Glu Met Leu Asn Ser Phe Leu Ser Asn Ala Gln Asn Arg	85	90	95
Ala Phe Ile Ala Phe Val Phe Lys Ala Lys Thr Phe Phe Ser Asp Ser	100	105	110
Ser His Ser Leu Ile Gly Arg Glu Asn Phe Asn Pro Phe Ser Thr Ile	115	120	125
Asp Gln Ser Ser Lys Ser Met Glu Met Arg Lys Ile Leu Ile Val Phe	130	135	140
Gln Tyr Met Phe Asp Ser Leu Asn Ile Gly Gly Cys Val Met Lys Pro	145	150	155
Ser Cys Xaa Ile Ser Leu Gly Tyr Thr Lys Tyr Glu Ser Glu Pro Cys	165	170	175
Ser Asp Thr Asn Cys Asp Gln Ser Gly Thr Lys Arg Gly Gly Glu Ile	180	185	190
Ser Ala Val Asp Asn Leu Val Lys Ile Arg Lys Tyr Glu Lys Ile Ser	195	200	205
Phe Leu Glu Met Lys Thr Lys Ser Gln Cys Lys Gln Phe Arg Glu Ser	210	215	220
Lys Asn Ser His Ile Gln Gly Thr Tyr Gln Phe Lys Val Val Arg Ser	225	230	235
Lys Pro Thr Ser Thr Cys Glu Ala Phe Phe Glu Glu Ala Pro Asn Phe	245	250	255
His Gln Ile Thr Leu Lys Gly Lys Asp Lys Tyr Leu Ser Tyr Xaa Leu	260	265	270
Leu Gln Trp Phe Ile Leu Leu Gln Ile Phe Asn Glu Lys Glu Gly Gly	275	280	285
Glu His Ala Ser Asn Lys Gln Asp Leu Leu Lys Thr Leu Leu Arg Leu	290	295	300
Phe Phe Ser Ile Tyr Cys Phe Ser Lys Val Val Phe Ser Ala Glu Asn	305	310	315
			320

Gly Val Phe Ile Asp Pro Lys Arg Ile Ile Trp Ala Pro Asn Phe Glu  
 325 330 335  
 Cys Ser Trp Val Pro Glu Val Ala Gly Ala Thr Ala Cys Gln Cys Leu  
 340 345 350  
 Thr Leu Asp Ser Val Leu Ala Val Pro Pro Pro Asp Leu Ser Gly Val  
 355 360 365  
 Gly Arg Cys His Arg Leu Asp Phe Phe Ser Ser Leu Val Gly Phe Gln  
 370 375 380  
 Thr Pro Lys Pro Val Arg Thr Arg Val Gln Leu Thr Arg Asn Arg Ile  
 385 390 395 400  
 Ile Gly Leu Thr Leu Asn Pro Asn Pro Asn Tyr Met Gln Thr Thr Gln  
 405 410 415  
 Leu Lys Ile Ser Ala Ser Phe Pro Ala Asn Val Glu Ser Ser Ser Gly  
 420 425 430  
 Asp Leu Ser Ala Asp Phe Tyr Thr Phe Gly Phe Leu Leu Ala Asp Ser  
 435 440 445  
 Gly Pro Asp Leu Val Ala Ser Leu Ala Ser Ser Arg Thr Phe Ser Val  
 450 455 460  
 Ile Ser Ala Asn Arg Arg Ser Leu Arg Gln Thr Phe Glu Asn Phe Asp  
 465 470 475 480  
 Lys Ser Pro Ile Ser Ser Arg Leu Val Pro Thr Ala Ser Leu Thr Lys  
 485 490 495  
 Leu Arg Thr Pro Met Ser Ile Glu Leu Asp Ser Gly Arg Leu Ala Leu  
 500 505 510  
 Tyr Phe Gln Ala Ile Ile Val Asn Pro Thr Tyr Leu Thr Gln Tyr Gly  
 515 520 525  
 Leu Asp Leu Thr His Gln Leu Ile Ser Ser Ser Lys Phe Asp Ile Gln  
 530 535 540  
 Gln Thr Ser Val Leu Asn Asn Pro Ser Gly Tyr Ser Tyr Val Thr Ile  
 545 550 555 560  
 Tyr Cys Asp Pro Tyr Val Lys Leu Ala Ser His Asp Pro Gly Arg Val  
 565 570 575  
 Thr Tyr Trp Pro Asn Thr Tyr Pro Leu Ser Lys Ser Ser Leu Leu Asn  
 580 585 590  
 Ser Ser Ser Leu Pro Val Ser Phe Phe Ile Thr Phe Glu Arg Ile Gln  
 595 600 605  
 Ile Lys Thr Asp Thr Lys His Gly Glu Thr Leu His Ala Ser Leu Trp  
 610 615 620  
 Lys Ala Leu Ile Arg Ala Ser Thr Asp Val Val Ser Phe Ile Thr His

625		630		635		640
Phe Phe Leu His	Asn His Val Ala Trp	Leu Cys Gln Thr Thr Thr Ser				
	645	650			655	
Leu Pro Leu Val	Val Pro Asn Arg Glu Arg Glu Thr Asp Arg Pro Pro					
	660	665			670	
His Ser Leu Trp	Arg Ser Asp Arg Gln Leu Arg Cys Cys Tyr Leu Arg					
	675	680			685	
Ser Cys Leu Arg	Ser Arg Glu Asp Cys Arg Pro Gly Ala Ala His Ala					
	690	695			700	
Leu Ala Ser Thr Gly	Lys Thr Pro Thr Arg Glu Ala Gln Met Leu Val					
705	710	715			720	
Pro Gln Ala Thr	Thr Asn Thr Thr Ser Pro Pro Phe Ser Ser Leu Ala					
	725	730			735	
Trp Ala Lys Leu	Gln Arg Ser Thr Ser Pro Ala Thr Val Thr Leu Gly					
	740	745			750	
Thr Thr Ala Ala	Arg Ala Ala Ala Lys Ser Ser Pro Ala Arg Ser Val					
	755	760			765	
Ala Ser Arg Cys	Ser Pro Ser Glu Val Ala Gly Leu Met Ala Val Pro					
	770	775			780	
Pro Lys Thr Pro	Arg Thr Arg His Thr Ser Gly Thr Val Ser Trp Val					
785	790	795			800	
Val Leu Leu Leu	Ala Thr Arg Asp Pro Ser Gly Met Arg Phe Trp Met					
	805	810			815	
Ala Thr Ser Thr	Ser Pro Glu Gly Ala Gln Asn Thr Met Met Asn Leu					
	820	825			830	
Pro Leu Ser Ser	Arg Pro Thr Thr Ser Arg Arg Pro Glu Arg Arg Lys					
	835	840			845	
Phe Thr Val Leu	Val Arg Ser Val Leu Ser Arg Ile Thr Gly Leu Ala					
	850	855			860	
Thr His Ser Glu	Gln Ile Ser Ser Thr Ser Cys Gly Cys Ser Ser Ser					
865	870	875			880	
Thr Thr Leu Arg	Ala Ile Ser Pro Arg Thr Leu Ser Ile Leu Gln Met					
	885	890			895	
Arg Ser Thr Ile	Gly Ser Cys Pro Ser Leu Arg Lys Ser Cys Ser Leu					
	900	905			910	
Gly Phe Leu Leu	Leu Leu Arg Leu Leu Gln Leu Val Ala Thr Phe His					
	915	920			925	
Pro Met Ile Ser	Tyr Leu Lys Phe Phe Arg Ser Arg Ile Pro Thr Ser					
	930	935			940	



1250

1255

1260

Gln Tyr Glu Thr Val Val Cys Tyr Gly His Gly Ser Phe Pro Lys Gln  
1265 1270 1275 1280

Ser Lys Ser Leu Thr Gly Leu Ser Val Gln Pro Ser Arg Thr Ala Arg  
1285 1290 1295

Ile Thr Gly Pro Arg Glu Thr Thr Asn Cys Gly Glu Leu Leu Xaa Thr  
1300 1305 1310

Glu Arg Cys Arg Pro Ser Asp Val Lys Trp Thr Ala Asp Arg Ser Pro  
1315 1320 1325

Glu Ile Gly Lys Ser Phe Arg Pro Pro Tyr His Asp Pro Arg Asp Pro  
1330 1335 1340

Ser Ser Pro Pro Pro Pro Thr Pro Phe Ser Ser Ser Ala Pro Ala Ile  
1345 1350 1355 1360

Gly Tyr Leu Ile Leu Cys Met Ile Ser Asn Phe Phe Ser Gly Val Val  
1365 1370 1375

Ser Tyr Ser Asn Phe Leu Asp Cys Cys Ile Glu Pro Ser Val Leu Val  
1380 1385 1390

Ala His Asp Gly Gly Glu Phe Arg Glu Met Gly Val Arg Ser Leu Val  
1395 1400 1405

Phe Cys Cys Arg Ser Gly Ala Arg Phe Gly Arg Val Phe Ser Leu Ile  
1410 1415 1420

Leu Ser Ser Ile Met Arg Ser Phe Leu Leu Gly Phe Gly Glu Phe Ala  
1425 1430 1435 1440

Leu Phe Arg Lys Lys Leu Leu Leu Ser Ser Phe Asp Ser Leu Asn Leu  
1445 1450 1455

Leu Ser Val Leu Asn Ile Arg Glu Cys Arg Ile Val Asn Asp Asp Ser  
1460 1465 1470

Phe Leu Glu Phe Tyr Phe Val Leu Phe Ser Val Ile Trp Arg Lys Tyr  
1475 1480 1485

Cys Ser Phe Ser Met Leu Ser Arg Pro Leu Gly Gly Leu Lys Val Lys  
1490 1495 1500

Ile Leu Ser Gly Asn Phe Pro Leu Ile Leu Pro Asn Thr Thr Gln Val  
1505 1510 1515 1520

Leu Thr Lys Ile Asp Ser Ser Tyr Ala Pro Ile Leu Thr Ser Leu Pro  
1525 1530 1535

Ser Val Leu Trp Leu Ser Leu Leu Leu Met Val Ala Leu Met Gly Arg  
1540 1545 1550

Leu Gly Asp Pro Leu Thr Cys Arg Ser Thr  
1555 1560



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<211> 2392  
<212> DNA  
<213> Musa acuminata

<220>  
<221> misc\_feature  
<222> (1720)..(1721)  
<223> Nucleotide 1721 is n wherein n = a or g or c or  
t/u.

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gctgaattgc tatgtttatc ttggccaaac tgtgtccatc tttgagcaga taaatctggc 180  
gataatgttc tttttactga aagcaactgca ggatgagggc ctgaaatcac atcggacgcc 240  
cactgggtca tgatgatatg gactcctcca cagcgagcag ccatgggatg tgagatccac 300  
atagcagcgt agataagga agcccgcaac actaggctgt tgttggtcca gtaaagatcg 360  
aaaggtcagg cgacagtgc gatcgacttt ttcgagcatg atgacaacga cgacctgctc 420  
ctgcaatatc cgtcccctac cgtagagtgg gaataaatgg gtttgtagtt gcactatttc 480  
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<213> Musa acuminata

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Glu Ser Thr Ala Gly Gly Pro Glu Ile Thr Ser Asp Ala His Trp Val  
65 70 75 80  
Met Met Ile Trp Thr Pro Pro Gln Arg Ala Ala Met Gly Cys Glu Ile  
85 90 95  
His Ile Ala Ala Ile Arg Glu Ala Arg Asn Thr Arg Leu Leu Leu Phe  
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Gln Arg Ser Lys Gly Gln Ala Thr Val Thr Ile Asp Phe Phe Glu His  
115 120 125  
Asp Asp Asn Asp Asp Leu Leu Leu Gln Tyr Pro Ser Pro Thr Val Glu  
130 135 140  
Trp Glu Met Gly Leu Leu His Tyr Phe Ser Gln Glu Leu Ile Glu Ser  
145 150 155 160  
Pro Ala Asn Cys Cys Phe Ser Phe Leu Ile Leu Asn Leu Pro Pro Val  
165 170 175  
Thr Leu Lys Leu His Val Lys Thr Phe Leu Tyr Gly Ser Glu His Glu  
180 185 190  
Ile Tyr His Ser Asn Gly Asp Leu His Tyr His His His His Leu  
195 200 205  
His Gly Phe Gly Ser Asn Thr Glu Asn Leu Ile Asn Pro Thr Pro Ile  
210 215 220



530

535

540

Cys Ile Cys Xaa Arg Ser Thr Leu Ala Glu Glu Leu Gly Phe Ala Phe  
545 550 555 560

Ala Gly Arg Lys Glu Thr Ala Thr Val Ser Ile Leu Leu Arg Pro Arg  
565 570 575

Arg Gly Thr Asp Leu Leu Leu Pro Pro Pro Arg Arg Gly Ser Asn Leu  
580 585 590

Gly Leu His Leu Ile Thr Leu Pro Asn Ala Phe Ser Val Phe Val Ser  
595 600 605

Ser Leu Gln Leu Arg Arg Arg Gly Asp Arg Cys Arg Arg Ser Cys Arg  
610 615 620

Ala Arg Gln Val Gln Val Arg Arg Arg Leu Arg Leu His Arg Leu Gln  
625 630 635 640

Val Trp Gln Leu Arg Ser Thr Cys Val Thr Thr Thr Lys Lys Phe Ala  
645 650 655

Met His Lys Lys Gln Lys Asn Lys Lys Lys Lys Gly Arg Arg Arg Arg  
660 665 670

Cys Tyr Val Leu Phe Gly Gln Ala Asp Arg Leu Asp Gly Ile Thr Gln  
675 680 685

Tyr His Leu Cys Tyr Leu Cys Pro Val Leu Gln Leu Ser Tyr Leu Ser  
690 695 700

Ser Met Lys Tyr Tyr Tyr Ser Gly Cys Val Ile His Ile Cys Cys Cys  
705 710 715 720

Cys Cys Cys Phe Leu Phe His Gln Ser Thr Gln Arg Ile Asp Cys Thr  
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Val Arg Pro Asn Phe Leu Thr Asp Met Leu Ala Gln Leu Arg Met Asn  
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Ser Asn Gln Thr Ser Leu  
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<210> 35

<211> 758

<212> PRT

<213> Musa acuminata

<400> 35

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Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln

45

Thr	Val	Ser	Ile	Phe	Glu	Gln	Ile	Asn	Leu	Ala	Ile	Met	Phe	Phe	Leu
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Gly	Ser	Tyr	Gly	Leu	Leu	His	Ser	Glu	Gln	Pro	Trp	Asp	Val	Arg	Ser
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Thr	Gln	Arg	Arg	Gly	Lys	Pro	Ala	Thr	Leu	Gly	Cys	Cys	Cys	Ser	Ser
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Lys	Asp	Arg	Lys	Val	Arg	Arg	Gln	Arg	Ser	Thr	Phe	Ser	Ser	Met	Met
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Thr	Thr	Thr	Thr	Cys	Ser	Cys	Asn	Ile	Arg	Pro	Leu	Pro	Ser	Gly	Asn
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Lys	Trp	Val	Cys	Ser	Cys	Thr	Ile	Ser	Arg	Arg	Asn	Leu	Lys	Ala	Leu
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Gln	Ile	Ala	Val	Ser	Leu	Ser	Leu	Tyr	Thr	Phe	Leu	Leu	Leu	His	Asn
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Cys	Met	Leu	Arg	His	Phe	Cys	Met	Asp	Pro	Asn	Met	Arg	Ser	Ile	Ile
			180					185					190		
Glu	Val	Met	Gly	Arg	Ile	Tyr	Ile	Ile	Ile	Ile	Ile	Ile	Ile	Ser	Met
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Gly	Leu	Asp	Leu	Ile	Arg	Pro	Lys	Thr	Ser	Phe	Lys	Ile	Gln	Pro	Gln
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Tyr	Trp	Leu	Asp	Leu	Leu	His	Leu	Gln	Glu	Lys	Tyr	Asn	Lys	Asn	Asn
225					230					235					240
Lys	Asn	Leu	Gly	Cys	Thr	Leu	Asn	Phe	Gly	His	Tyr	Glu	Arg	Ile	Met
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Asp	Lys	Tyr	Asn	Lys	Lys	Ile	Ile	Ile	Ile	Tyr	Ser	Leu	Arg	Phe	Thr
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Phe	Tyr	Pro	Pro	Asn	Leu	Thr	Ser	Ala	Ser	Asn	Phe	His	Ile	Leu	Gly
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Ser	Lys	Lys	Ser	Leu	Pro	Leu	Thr	Asp	Glu	Ile	Phe	Leu	Leu	Ile	Arg
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Gly	Arg	Ile	Tyr	Asn	Ile	Tyr	Ile	Tyr	Ile	Tyr	Leu	Phe	Ile	Arg	Phe
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Pro	Phe	Leu	Ser	Pro	Glu	Tyr	Glu	Ser	Thr	Ala	Ile	Ser	Ala	Lys	Thr
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His	Gln	Leu	Phe	Thr	Val	Asn	Ala	His	Ile	Lys	Val	Glu	Ile	Thr	Phe
			340					345					350		

Lys Phe Leu Glu Ile Ser Asn Lys Ile Tyr Ser Tyr Leu Leu Gln Cys  
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 Ser Gly Asp Gly Arg Met Arg Val Ser Ala Ala Cys Asp Leu Cys Gly  
 370 375 380  
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 385 390 395 400  
 Pro Pro Pro Arg Thr Ser Gln Ile Pro Asp Thr Ala Tyr Pro Gly Gly  
 405 410 415  
 Val Trp Thr Ala Gln Thr Asn Glu Met Pro Ile Pro Pro Leu Ser Phe  
 420 425 430  
 Phe Leu Phe Ala Cys Val Arg Gly Ala Pro Ile Asn Lys His Glu Thr  
 435 440 445  
 Ser Pro Phe Ser Leu Gln Glu His Thr Thr Pro Phe Thr His Tyr Ile  
 450 455 460  
 Leu Cys Phe Phe Glu Pro Phe Arg Leu Pro Ser Ser Ser Asn His Val  
 465 470 475 480  
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 Pro Pro Ser Leu His Leu Phe Phe Phe Phe Phe Phe Phe Pro Arg  
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 625 630 635 640  
 Leu Val Ser Leu Pro Leu Asn Asn Lys Ser Leu Gln Cys Ile Lys Asn  
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670

Ala Thr Lys Arg Val Cys  
755

<213> Musa acuminata

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Asp Leu Phe Ser Gln Ser Leu Ser Leu Ser Leu Ser Leu Ser  
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Val Cys Leu Ile Trp Leu Cys Ile Ala Met Phe Ile Leu Ala Lys Leu  
35 40 45

Cys Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys  
50 55 60

Arg Met Arg Ala Asn His Ile Gly Arg Pro Leu Gly His Asp Asp Met  
65 70 75 80

Asp Ser Ser Thr Ala Ser Ser His Gly Met Asp Pro His Ser Ser Val  
85 90 95

Asp Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu  
100 105 110

Arg Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro  
115 120 125

Ala Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe  
130 135 140

Val Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu  
145 150 155 160

Phe Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala

165 170 175

Cys	Asp	Ile	Ser	Val	Trp	Ile	Arg	Thr	Asp	Leu	Ser	Leu	Lys	Trp	Val
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Asp	Arg	Lys	Pro	His	Leu	Lys	Ser	Asn	Pro	Asn	Ile	Gly	Leu	Thr	Cys
	210					215					220				
Ser	Ile	Ser	Lys	Lys	Asn	Thr	Thr	Arg	Thr	Thr	Lys	Ile	Asp	Ala	His
	225				230					235					240
Ile	Asp	Leu	Val	Thr	Met	Arg	Glu	Ser	Trp	Ile	Lys	Asn	Ile	Lys	Ile
				245					250					255	
Lys	Asn	Lys	Ser	Ser	Ser	Thr	His	Ser	Asn	Asp	Ser	His	Ser	Ile	His
			260					265					270		
Gln	Ile	His	Arg	Leu	Leu	Ile	Asn	Phe	Ile	Tyr	Val	Leu	Lys	Asn	Leu
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	290					295					300				
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Ser	His	Gln	Asn	Met	Asn	Arg	Arg	Pro	Tyr	Leu	Gln	Lys	Pro	Thr	Asn
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Cys	Ser	Gln	Thr	Leu	Ile	Glu	Leu	Arg	Ser	Lys	Leu	Leu	Leu	Asn	Phe
			340					345					350		
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Ala	Gly	Thr	Arg	Arg	Arg	Gln	Gly	Arg	Glu	Arg	Thr	Ile	Pro	Ser	Leu
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Leu	Leu	Pro	His	His	Ala	Arg	Leu	Arg	Phe	Pro	Ile	Arg	Pro	Ile	Pro
			405						410					415	
Val	Ala	Cys	Gly	Leu	His	Arg	Arg	Thr	Ser	Lys	Cys	Pro	Ser	Pro	Leu
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Gln	Ala	Pro	Phe	Leu	Ser	Lys	Asn	Thr	Pro	His	His	Ser	His	Thr	Thr
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Val Lys Thr Gln Ser Phe Ile Arg Glu His Gln Gln Tyr Tyr Met Tyr  
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Met Xaa Lys Val Asn Val Gly Arg Thr Trp Phe Cys Leu Cys Arg Lys  
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Lys Gly Asn Ser Tyr Gly Ile Asp Ile Val Glu Thr Glu Lys Arg Tyr  
565 570 575

Leu Ala Ser Ser Pro Ser Ser Ser Ser Arg Met Ile Lys Leu Ile Arg  
580 585 590

Ile Thr Pro Tyr Tyr Leu Thr Cys Phe Phe Arg Ile Arg Phe Val Ser  
595 600 605

Ser Ala Thr Ser Thr Arg Ser Leu Pro Gln Lys Leu Pro Ser Met Thr  
610 615 620

Ala Ser Ala Ser Ala Ala Pro Pro Ala Pro Ala Pro Thr Ala Ser Val  
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Ala Thr Glu Lys His Leu Cys His Tyr His Ile Lys Val Cys Asn Ala  
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Lys Thr Lys Glu Gln Lys Lys Lys Arg Lys Lys Lys Lys Val Trp Leu  
660 665 670

Cys Thr Leu Ile Ile Arg Ala Gly Val Val Arg Trp Asp Asn Ala Val  
675 680 685

Ser Ser Val Leu Ser Leu Ser Cys Val Thr Thr Leu Leu Ser Ile Leu  
690 695 700

Val Asn Glu Ile Leu Leu Val Leu Ile Trp Leu Cys His Ser Tyr Met  
705 710 715 720

Leu Leu Leu Leu Leu Leu Pro Leu Ser Pro Ile Asn Pro Lys Asp Arg  
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Leu His Cys Lys Ala Gln Leu Pro His Arg Tyr Ala Arg Ser Val Thr  
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<213> Musa acuminata

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<211> 597
<212> PRT
<213> Musa acuminata
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115 120 125

Asn Asp Asp Leu Leu Leu Gln Tyr Pro Ser Pro Thr Val Glu Trp Glu  
130 135 140

Met Gly Leu Leu His Tyr Phe Ser Gln Glu Leu Ile Glu Ser Pro Ala  
145 150 155 160

Asn Cys Cys Phe Ser Phe Leu Ile Leu Asn Leu Pro Pro Val Thr Leu  
165 170 175

Lys Leu His Val Lys Thr Phe Leu Tyr Gly Ser Glu His Glu Ile Tyr  
180 185 190

His Ser Asn Gly Asp Leu His Tyr His His His His His Leu His Gly  
195 200 205

Phe Gly Ser Asn Thr Glu Asn Leu Ile Asn Pro Thr Ile Leu Ala Leu  
210 215 220

Ala Pro Ser Pro Arg Lys Ile Gln Gln Glu Gln Gln Lys Phe Arg Met  
225 230 235 240

His Ile Glu Leu Ile Trp Ser Leu Glu Asn His Gly Leu Lys Ile Leu  
245 250 255

Lys Lys Ile Asn His Asn His Leu Leu Thr Leu Thr Ile His Ile Leu  
260 265 270

Ser Thr Lys Phe Asp Ile Gly Phe Leu Ile Ser Tyr Ile Arg Phe Lys  
275 280 285

Ile Ser Pro Phe Asp Arg Ile Asn Ile Ser Phe Asn Ser Leu Gly Lys  
290 295 300

Asp Leu Ile Tyr Ile Tyr Ile Tyr Ile Phe Ile Tyr Ile Leu Thr Ile  
305 310 315 320

Ser Leu Thr Arg Ile Ile Asp Gly His Ile Cys Lys Asn Pro Pro Ile  
325 330 335

Val His Ser Lys Arg Ser Leu Asn Gly Arg Asn Tyr Phe Ile Ser Arg  
340 345 350

Asp Phe Gln Asn Ile Leu Val Ser Phe Thr Val Met Met Leu Arg Met  
355 360 365

Ile Arg Trp Lys Asp Ala Cys Val Ser Arg Leu Arg Ser Leu Trp Arg  
370 375 380

Gly Arg Asp Glu Asp Lys Asp Val Ser Gly Arg Tyr Gln Val Phe Ser  
385 390 395 400

Ser Pro Thr Thr His Val Ser Asp Ser Arg Tyr Gly Leu Ser Arg Trp

405

410

415

Arg Val Asp Cys Thr Asp Glu Arg Val Asn Ala His Pro Pro Ser Phe  
420 425 430

Ile Leu Ser Leu Cys Val Cys Glu Arg Ser Ala Tyr Lys Ala Arg Asn  
435 440 445

Lys Pro Leu Phe Ser Pro Arg Thr His His Thr Ile His Thr Leu His  
450 455 460

Pro Leu Leu Leu Arg Ala Phe Ser Pro Ser Phe Leu Val Pro Cys Arg  
465 470 475 480

Pro Ala Ala Thr Ala Thr Ala Leu Thr Arg Ala Ser Ala Cys Lys Ser  
485 490 495

Ser Ser Ile Pro Pro Pro Leu Leu Leu Leu Leu Leu Leu Leu Leu  
500 505 510

Thr Ser Pro Arg Leu Cys Leu Met Ser Arg Leu Phe Pro His Arg Ser  
515 520 525

Ser Lys Leu Arg Ala Leu Leu Gly Asn Ile Ser Asn Thr Ile Cys Ile  
530 535 540

Cys Xaa Arg Ser Thr Leu Ala Glu Glu Leu Gly Phe Ala Phe Ala Gly  
545 550 555 560

Arg Xaa Glu Thr Ala Thr Val Ser Ile Leu Leu Xaa Pro Lys Xaa Gly  
565 570 575

Thr Asp Xaa Leu Leu Leu Pro Pro Pro Arg Arg Xaa Ser Asn Leu Gly  
580 585 590

Leu Xaa Leu Ile Thr  
595

<210> 40

<211> 590

<212> PRT

<213> Musa acuminata

<400> 40

His Trp Tyr Gly Ala Pro Leu Glu Val Asp Gly Ile Asp Lys Leu Ser  
1 5 10 15

Leu Leu Ser Ile Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Cys Met  
20 25 30

Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln  
35 40 45

Thr Val Ser Ile Phe Glu Gln Ile Asn Leu Ala Ile Met Phe Phe Leu  
50 55 60

Leu Lys Ala Leu Gln Asp Glu Gly Leu Lys Ser His Arg Thr Pro Thr



65

70

75

80

Gly Ser Tyr Gly Leu Leu His Ser Glu Gln Pro Trp Asp Val Arg Ser  
 85 90 95  
 Thr Gln Arg Arg Gly Lys Pro Ala Thr Leu Gly Cys Cys Cys Ser Ser  
 100 105 110  
 Lys Asp Arg Lys Val Arg Arg Gln Arg Ser Thr Phe Ser Ser Met Met  
 115 120 125  
 Thr Thr Thr Thr Cys Ser Cys Asn Ile Arg Pro Leu Pro Ser Gly Asn  
 130 135 140  
 Lys Trp Val Cys Ser Cys Thr Ile Ser Arg Arg Asn Leu Lys Ala Leu  
 145 150 155 160  
 Gln Ile Ala Val Ser Leu Ser Leu Tyr Thr Phe Leu Leu Leu His Asn  
 165 170 175  
 Cys Met Leu Arg His Phe Cys Met Asp Pro Asn Met Arg Ser Ile Ile  
 180 185 190  
 Glu Val Met Gly Arg Ile Tyr Ile Ile Ile Ile Ile Ile Ile Ser Met  
 195 200 205  
 Gly Leu Asp Leu Ile Arg Pro Lys Thr Ser Phe Lys Ile Gln Pro Tyr  
 210 215 220  
 Trp Leu Asp Leu Leu His Leu Gln Glu Lys Tyr Asn Lys Asn Asn Lys  
 225 230 235 240  
 Asn Leu Gly Cys Thr Leu Asn Phe Gly His Tyr Glu Arg Ile Asp Lys  
 245 250 255  
 Tyr Asn Lys Lys Ile Ile Ile Ile Tyr Ser Leu Arg Phe Thr Phe Tyr  
 260 265 270  
 Pro Pro Asn Leu Thr Ser Ala Ser Asn Phe His Ile Leu Gly Ser Lys  
 275 280 285  
 Lys Ser Leu Pro Leu Thr Asp Glu Ile Phe Leu Leu Ile Arg Gly Arg  
 290 295 300  
 Ile Tyr Asn Ile Tyr Ile Tyr Ile Tyr Leu Phe Ile Arg Phe Pro Phe  
 305 310 315 320  
 Leu Ser Pro Glu Tyr Glu Ser Thr Ala Ile Ser Ala Lys Thr His Gln  
 325 330 335  
 Leu Phe Thr Val Asn Ala His Ile Lys Val Glu Ile Thr Phe Lys Phe  
 340 345 350  
 Leu Glu Ile Ser Asn Lys Ile Tyr Ser Tyr Leu Leu Gln Cys Ser Gly  
 355 360 365  
 Asp Gly Arg Met Arg Val Ser Ala Ala Cys Asp Leu Cys Gly Gly Asp  
 370 375 380

Glu Thr Lys Thr Arg Thr Ala Asp Asp Thr Lys Ser Ser Pro Pro Pro  
385 390 395 400

Pro Arg Thr Ser Gln Ile Pro Asp Thr Ala Tyr Pro Gly Gly Val Trp  
405 410 415

Thr Ala Gln Thr Asn Glu Met Pro Ile Pro Pro Leu Ser Phe Phe Leu  
420 425 430

Phe Ala Cys Val Arg Gly Ala Pro Ile Asn Lys His Glu Thr Ser Pro  
435 440 445

Phe Ser Leu Gln Glu His Thr Thr Pro Phe Thr His Tyr Ile Leu Cys  
450 455 460

Phe Phe Glu Pro Phe Arg Leu Pro Ser Ser Ser Asn His Val Asp Leu  
465 470 475 480

Arg Gln Leu Arg Leu Arg Gln Glu Pro Val Arg Val Ser His Pro Pro  
485 490 495

Ser Leu His Leu Phe Phe Phe Phe Phe Phe Phe Phe Pro Arg Pro  
500 505 510

Val Cys Val Val Asp Ser Ser His Ile Arg Ala Gln Asn Ser Glu Leu  
515 520 525

Tyr Gly Thr Ser Ala Ile Leu Tyr Val Tyr Val Xaa Gly Gln Arg Trp  
530 535 540

Leu Lys Asn Leu Val Leu Pro Leu Gln Glu Glu Xaa Lys Gln Leu Xaa  
545 550 555 560

Tyr Xaa Tyr Cys Xaa Arg Lys Xaa Val Leu Ile Xaa Phe Phe Ser Leu  
565 570 575

Leu Leu Val Xaa Asp Asp Gln Thr Asn Asp Tyr Xaa Leu Leu  
580 585 590

<210> 41

<211> 441

<212> PRT

<213> Musa acuminata

<400> 41

Thr Gly Thr Gly Pro Pro Ser Arg Ser Thr Val Ser Ile Ser Phe Asp  
1 5 10 15

Leu Phe Ser Gln Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Val  
20 25 30

Cys Leu Ile Trp Leu Cys Ile Ala Met Phe Ile Leu Ala Lys Leu Cys  
35 40 45

Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys Arg  
50 55 60

Met Arg Ala Asn His Ile Gly Arg Pro Leu Gly His Asp Asp Met Asp  
 65 70 75 80  
 Ser Ser Thr Ala Ser Ser His Gly Met Asp Pro His Ser Ser Val Asp  
 85 90 95  
 Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu Arg  
 100 105 110  
 Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro Ala  
 115 120 125  
 Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe Val  
 130 135 140  
 Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu Phe  
 145 150 155 160  
 Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala Cys  
 165 170 175  
 Asp Ile Ser Val Ser Trp Ile Arg Thr Asp Leu Ser Leu Lys Trp Val  
 180 185 190  
 Gly Phe Thr Leu Ser Ser Ser Ser Ser Ser Pro Trp Val Trp Ile Leu  
 195 200 205  
 Asp Arg Lys Pro His Leu Lys Ser Asn Pro Asn Ile Gly Leu Thr Cys  
 210 215 220  
 Ser Ile Ser Lys Lys Asn Thr Thr Arg Thr Thr Lys Ile Asp Ala His  
 225 230 235 240  
 Ile Asp Leu Val Thr Met Arg Glu Ser Trp Ile Lys Asn Ile Lys Ile  
 245 250 255  
 Lys Asn Lys Ser Ser Ser Thr His Ser Asn Asp Ser His Ser Ile His  
 260 265 270  
 Gln Ile His Arg Leu Leu Ile Asn Phe Ile Tyr Val Leu Lys Asn Leu  
 275 280 285  
 Ser Leu Gln Met Asn Lys Tyr Phe Phe Phe Val Arg Glu Gly Ser Asn  
 290 295 300  
 Ile Ile Tyr Ile Tyr Ile Tyr Leu Arg Ser Lys Leu Leu Leu Asn Phe  
 305 310 315 320  
 Arg Phe Pro Ile Lys Tyr Thr Arg Ile Phe Tyr Ser Asp Asp Ala Pro  
 325 330 335  
 Asp Asp Lys Met Glu Gly Cys Val Cys Gln Pro Pro Ala Ile Ser Val  
 340 345 350  
 Ala Gly Thr Arg Arg Arg Gln Gly Arg Glu Arg Thr Ile Pro Ser Leu  
 355 360 365  
 Leu Leu Pro His His Ala Arg Leu Arg Phe Pro Ile Arg Pro Ile Pro

370

375

380

Val Ala Cys Gly Leu His Arg Arg Thr Ser Lys Cys Pro Ser Pro Leu  
385 390 395 400

Phe His Ser Phe Ser Leu Arg Val Glu Glu Arg Leu Ile Ser Thr Lys  
405 410 415

Gln Ala Pro Phe Leu Ser Lys Asn Thr Pro His His Ser His Thr Thr  
420 425 430

Ser Ser Ala Ser Ser Ser Leu Phe Ala  
435 440

<210> 42  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Primer.

<400> 42  
gatcgccatg gtgaatg

17

<210> 43  
<211> 17  
<212> DNA  
<213> Artificial Sequence  
<220>  
<223> Primer.

<400> 43  
gtaaaacgac ggccagt

17

<210> 44  
<211> 2156  
<212> DNA  
<213> Musa acuminata

<220>  
<221> misc\_feature  
<222> (507)  
<223> Nucleotide at position 507 is "s" wherein "s" = c or g.

<220>  
<221> misc\_feature  
<222> (879)  
<223> Nucleotide at position 879 is "n" wherein "n" = a, c, g, or t.

<400> 44  
ggatcccaac ttttaggaat ggatcttaaa attttagtta taagttcaaa gttagaaaaa 60

tctttaccaa gagctttgag tccattgatg acatccgtga aacgggtgtac atgtctccga 120



ccttatccaa atccagtctt ctcaactott ctagcctacc cgtctctttt tttattactt 1920  
 ttgaaagaat tcaaatacaa acagatacaa aataacacgg tgagacactg tgacatgcta 1980  
 gtctctggaa agcattaatt cgcgcattcca cagacgtcgt cagcttcac acccactttt 2040  
 tcctacatac catgtcgcat ggctttgttg atgacagacc accacaagct tgcctttggt 2100  
 tgtgcctaac agagagagag agagagacag accgatagcc tcctcattca ctatgg 2156

<210> 45  
 <211> 2160  
 <212> DNA  
 <213> Musa acuminata

<220>  
 <221> misc\_feature  
 <222> (511)  
 <223> Nucleotide 511 is "s" wherein "s" = c or g.

<220>  
 <221> misc\_feature  
 <222> (883)  
 <223> Nucleotide 883 is "n" wherein "n" = a, c, g, or t.

<400> 45  
 ggatcccaac ttttaggaat ggatcttaaa attttagtta taagttcaaa gttagaaaaa 60  
 tttttaccaa gagctttgag tccattgatg acatccgtga aacgggtgtac atgtctccga 120  
 tggactcact tggtttcatt cggaaaagtt cgaaagagt cataagaata ttgatttttg 180  
 attctttcac tcggttggtg ccttcatgag tgacctcaag agtcctccaa atatcaaaag 240  
 ccgaatcaca aattgaaatg tgattgaatt catttttgtc taatgcacaa aacagggcat 300  
 tcatagcctt tgtgttttaa gcaaaaacat tcttctccga ttcattccat tcgctcatcg 360  
 gaagagaaaa tttttgaaat ccatttttga caatagacca aagctcgaaa tccatgcatg 420  
 gaaatgagga agatcctcat atgagttttc caatacatgt aattcgactc attaaacata 480  
 ggtggatgtg taatgaaatg accctcatgc scatctcttc ttgggtatta aaccaaatat 540  
 gagagtgagc cttgctctga taccaattgt taggatcaga gtggcactaa gagagggggg 600  
 gagtgaatta gtgcagtgga ttaaaactta taagttttaa aatgaattcg taaatacgag 660  
 aagatttcgt tttaatagta acttgagtag atgaaaacca aaagttaaca gtagtgtaaa 720  
 taacaatttc gggaaagtaa gaactcacac attcaaggaa cataccaatt taaagtgggt 780  
 cggtcaaaat gacctacatc cacttgtaga gccttcttcg aagaggctcc caactccac 840  
 tagcaaatca ctttgaaggg gaaggacaaa tacctctctt acnacctttt acaatgggtc 900  
 ataactttac aaattttcaa cgagaaagaa ggaggtgaac atgcaagcaa ttgaaaacaa 960

